

leaseholds may be a new theory, but it is facile as it is just. The interests of humanity require it; and the consummation of such an act will reflect credit on the member who may carry such a measure as this suggested by

QUONDAM.

SURFACE-DELINEATION AND PLAN-MODELLING.

CARRINGTON'S MODEL OF YORKSHIRE AND LANCASHIRE.

At the present moment, while sanitary improvements and the general drainage of land occupy so much of the public attention, it is a matter of importance that the most judicious and economical mode of showing the undulating surface of ground, so as to devise the best method of draining it and effecting improvements at the least possible cost, should be known.

The present system of sections and contour lines gives but a partial knowledge of the character of ground, inasmuch as the undulations can only be shown where the traverse is made with the level. Beyond this (on either side of the line traversed) no information is supplied; so that, to arrive at any thing like a knowledge of the surface of a country, many sections and cross-sections are requisite. In like manner, contours following out lines of equal altitude show the form of the ground only where the level passes. Moreover, the expense of contouring a piece of country is more costly than most persons are aware of. To contour ground for practical purposes, so as to enable parties when on the ground to find the line traversed, it is requisite to have the contour line staked out: the distance between the stakes averages about one chain.

For towns, a series of sections taken through the streets is unquestionably the best method of obtaining the different altitudes.

It is surprising to hear so many persons praise the system of contouring towns. Are they aware that, to a great extent, it is fiction? It may look very pretty on paper, and persons may fancy they have a knowledge of the ground from such a mode. Test its accuracy! It will be found void of truth. You cannot follow out a contour line in a town, where its direction would be intercepted by buildings and offsets and obstructions innumerable. Contouring of towns, and of precipitous and rocky grounds, has never yet been accomplished.

Valuable and indispensable as sections are, they fail to give that which is most desirable in designing and carrying out any great work, a comprehensive and detailed whole.

This defect then existing, it seems a matter of regret to find that a beautiful and economical method of delineating ground has been passed over. This method (the horizontal delineation of ground, and which is so little known) was introduced into the Ordnance Department by Mr. Dawson. So valuable and important was this particular study considered, that his Grace the Duke of Wellington, when Master-General of the Ordnance, ordered a limited number of young gentlemen to specifically study that art, in addition to every other branch of surveying.

Mr. Frederic A. Carrington, a gentleman who held an appointment from the Master-General and Board of Ordnance, and who was specially instructed in the above studies, after having delineated large tracts of country, and made finished topographical "hill" drawings for the Ordnance, of more than 9,000 square miles of country, has for the last three years particularly devoted his attention to the delineation of ground, and to modelling for practical purposes.

This system of horizontal delineation (correctly done), combined with a judicious mode of levels, imparts a thorough knowledge of the surface of a country. Minute features, as well as rocky and contorted ground, are clearly expressed: and in designing the improvements and drainage of towns and estates, it is very valuable.

Were London, Liverpool, or any of our great towns surveyed in this manner, not only might the rise and fall of every street be exhibited, but the continuity of the fall. The height in feet at the intersection of the streets, and every other remarkable point, could be added.

Then, as regards estates, take the case of our great landed proprietors, anxious to improve their property in laying out new roads and draining the land.

Supposing they were desirous of carrying out the work progressively, or from year to year, by having the estate delineated in the manner proposed, all improvements, as well as the thorough drainage of the property, could at once be projected; and, if required, laid out with the greatest nicety and economy.

Models of towns, estates, and districts of country, executed in this manner, can be multiplied at a comparatively small cost. They can be produced in a composition resembling ivory, gutta percha, papier maché, &c., impervious to water. Among those we have seen are Blyth and Seriby Hall, in Nottinghamshire (to show its applicability to estates), on a scale of four chains to an inch; that of part of the town of Dundee, on a scale of 100 feet to an inch, for towns and boroughs generally; and, lastly, that which may be called the chief work, in illustration of a tract of country, on a scale of one inch to the mile. The portion chosen for this purpose is, perhaps, among the most difficult and interesting in the kingdom, "the great manufacturing districts of Yorkshire and Lancashire." There is much for contemplation in the district thus embraced, extending from Lincoln westwards some 70 miles, to Congleton, in Cheshire; from Congleton northwards, by Manchester to Burnley (say 45); from Burnley, east, by Bradford and Leeds to South Cave on the Humber; and from the Humber, south to Lincoln,—it forms a parallelogram including a surface of about 3,000 square miles. The site of six and forty cities and towns, villages innumerable, parks, woods, roads, railroads, and canals, are all shown in relief. The sources and windings of all the rivers and streams, among the hills and through the plains; the Trent and the Mersey, the Derwent and the Don, the Calder and the Dane, the Irwell and the Rother, may be seen at a glance.

The physical peculiarities are, if anything, still more interesting. At once it may be seen why geologists call the country near Manchester, the "Manchester basin"; the term is most apt, for the hills form a perfect crescent around it, of which it is as nearly as possible the centre. The great mountain ridge that divides Lancashire and Yorkshire, running in a north-west and south-east direction, is, to the north-east of Manchester, broken in a most remarkable manner, forming at this point the celebrated pass of Todmorden, which, circuitous and narrow, has been taken advantage of for turnpike, canal, and railroad, as affording, in the first instance, the easiest and best transit between the counties.

The summit ridge previously named, formed of millstone grit, varying from 1,500 to 2,000 feet above the sea (with the Lancashire and Yorkshire coal fields on its west and east side), is divided in two at the Peak of Derby, to make way for the upheaved mass of mountain limestone, of which the greater part of that county is composed. The next great feature on the Yorkshire side is what may be called the magnesian limestone ridge, from 200 to nearly 600 feet high, gradually dying off in the soft features of the new red sandstone, till lost in the valley of the Trent, and the great flats near the Isle of Axholme, when it is again relieved by the lesser, but well-marked, oolite ridge, on which Lincoln stands, and along which the great line of the Roman road is taken direct to the Humber.

Where the canals were first constructed to aid the transit between the counties, the railroads have followed in nearly a parallel line, with the exception of that great work, the Manchester and Sheffield line. We see in a moment where and to what extent, from the neighbouring hills, the Lancashire towns can be supplied with water for domestic, manufacturing, and sanitary purposes. The same in reference to Yorkshire, and far distant as they are, the whole produce of the sources of the Derwent and the Dove, could be brought to the metropolis, should it so be willed. As it is necessary to impound and store the water in the hill districts for use; so in the plains, an important object is gained if we can regulate the upland drainage, or find means for its being more rapidly carried off from these low lands, in order to bring what are now marshes

into cultivation, to turn what is waste to profit, to make what is now a source of disease healthy and valuable.

Again, in a military point of view (for the use of an officer in command), nothing else can at all approach a work of this kind. To the Government such a work (always of course supposing it correct) is invaluable.

What do we know of our exposed southern coast and harbours? If such be the case at home, what must it be in reference to our possessions in the east and elsewhere? Who knows India? What is Sidney like? What are the features of the Cape Colonies and Port Natal?

Impressed with the obvious advantage of this mode of surface-delineation, we are anxious that Mr. Carrington's system should have a fair investigation, and if found to fulfil all that it promises, a liberal encouragement.

PUBLIC BATHS AND WASHHOUSES.

For a special purpose, we are asked for some relative information concerning the baths and washhouses of the metropolis. The baths at George-street are a long strip of a building, irregular, and taking parts of two sides of a square. A general description of it has appeared in our pages.

Those at Glasshouse-yard are merely half a dozen baths fitted up in different parts of the large refuge for the houseless poor. There are also scattered washing tubs and troughs.

The building at Goulston-square ("The Model Establishment,") described in *THE BUILDER* more than once, covers a piece of ground, not quite rectangular, about 90 feet by 120 feet. It has a basement containing tank, coal cellars, boiler-room, engine-room, towel washing-room, &c., and a ground-floor nearly equally divided into two parts, one the bathhouse and the other the washhouse.

The St. Martin's "baths and laundries," cover a piece of land about 80 feet by 40 feet. The basement has the boiler-room, &c., the ground-floor, the baths, and the first story the washhouse. The model establishment will probably not cost less than 22,000*l.*: it has ninety-four baths, each in a separate apartment 6 feet square, and ninety-six washing places, each with its separate drying closet.

St. Martin's will probably cost 15,000*l.* About sixty-four baths and fifty-six washing places, each with its separate drying closet. Cheaper plans are needed. At Goulston-square they have had and still have to go through the cost and disappointment of experiments. The plans have not been published.

The success at St. Martin's is said to be considerable. With only about thirty baths completed for use, the bathers during the first nineteen days have been 6,701, and the receipts 94*l.* 13*s.* 2*d.*

Baths and washhouses are about to be erected in Macclesfield.

ON THE TOPOGRAPHY AND ANTIQUITIES OF THE CITY OF JERUSALEM.

THE following paper relates first to the topography of the city of Jerusalem, and afterwards to the existing antiquities. To illustrate the topography, I annex a plan taken by me in the year 1825. It was measured under circumstances of considerable difficulty, for at the period of my visit Jerusalem was in the possession of the Arab natives, who had some time before expelled their Turkish governor and his garrison; and during my sojourn there, we were in expectation of a combined attack from the armies of the pashas of Damascus and Arce.

Since then, circumstances have been more favourable for research in the East. From the exhibition of Mr. Catherwood's panorama, and the publications of various travellers, the subject of the topography and antiquity of Jerusalem has engaged the attention of the biblical antiquary, and has given rise to much controversy and to many wild theories. My object in this paper is not so much criticism as to give some information on a subject interesting alike to the architect and the archaeologist, and to direct the attention of the members and other

* Read at the ordinary general meeting of the Royal Institute of British Architects, Feb. 8, 1849.